

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 03/40271

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 D21H21/16

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 D21H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 257 772 A (NIPPON OIL CO LTD ; SEIKO KAGAKU KOGYO CO LTD (JP); HOKUETSU PAPER MIL) 2 March 1988 (1988-03-02) claims 1-7; example 1	1,12,16, 17,23, 26,30,31
X	US 4 832 792 A (MAZZARELLA EMIL D ET AL) 23 May 1989 (1989-05-23) claims 1-13; example 1	1,30,31, 33
X	US 4 657 946 A (BRESLIN MICHAEL D ET AL) 14 April 1987 (1987-04-14) claims 1-12; examples 1-3	1,30,31, 33
A	US 4 040 900 A (MAZZARELLA EMIL D ET AL) 9 August 1977 (1977-08-09) the whole document	1-33
	-/-	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

G document member of the same patent family

Date of the actual completion of the international search

25 May 2004

Date of mailing of the international search report

04/06/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax (+31-70) 340-3018

Authorized officer

Karlsson, L

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 03/40271

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6 159 339 A (SCHUETZ JUERGEN F ET AL) 12 December 2000 (2000-12-12)	1-33
A	WO 97/30218 A (HERCULES INC ; BRUNGARDT CLEMENT L (US); RIEHLE RICHARD J (US); ZHANG) 21 August 1997 (1997-08-21) the whole document	1-33
A	US 6 248 164 B1 (HAAKANSSON PHILIP) 19 June 2001 (2001-06-19) the whole document	1-33
A	US 4 687 519 A (JAROWENKO WADYM ET AL) 18 August 1987 (1987-08-18) the whole document	1-33

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 03/40271

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 0257772	A	02-03-1988	JP 1867351 C	26-08-1994
			JP 5077797 B	27-10-1993
			JP 63028999 A	06-02-1988
			DE 3767410 D1	21-02-1991
			EP 0257772 A1	02-03-1988
			FI 873177 A ,B,	23-01-1988
			NO 873043 A ,B,	25-01-1988
			US 4849055 A	18-07-1989
US 4832792	A	23-05-1989	US 4728366 A	01-03-1988
			AT 40164 T	15-02-1989
			AU 566066 B2	08-10-1987
			AU 6302386 A	09-04-1987
			CA 1276056 C	13-11-1990
			DE 3661850 D1	23-02-1989
			EP 0217202 A1	08-04-1987
			FI 864025 A	04-04-1987
			JP 62085098 A	18-04-1987
US 4657946	A	14-04-1987	AT 66028 T	15-08-1991
			AU 577735 B2	29-09-1988
			AU 3800485 A	01-08-1985
			BR 8500339 A	03-09-1985
			CA 1249388 A1	24-01-1989
			CS 8500583 A2	16-09-1988
			DE 3583688 D1	12-09-1991
			DK 34085 A	28-07-1985
			EP 0151994 A2	21-08-1985
			ES 8609428 A1	16-12-1986
			FI 850296 A ,B,	28-07-1985
			GR 850215 A1	17-05-1985
			MX 166763 B	02-02-1993
			NZ 210958 A	30-08-1988
			PL 251704 A1	08-10-1985
US 4040900	A	09-08-1977	US RE29960 E	10-04-1979
			AR 204448 A1	06-02-1976
			AU 8120075 A	18-11-1976
			BR 7503115 A	27-04-1976
			CA 1043511 A1	05-12-1978
			DE 2522306 A1	04-12-1975
			FI 751456 A ,B,	21-11-1975
			FR 2272221 A1	19-12-1975
			GB 1492104 A	16-11-1977
			IT 1035774 B	20-10-1979
			JP 959923 C	28-06-1979
			JP 50160505 A	25-12-1975
			JP 53036044 B	30-09-1978
			SE 417533 B	23-03-1981
			SE 7505737 A	21-11-1975
US 6159339	A	12-12-2000	DE 19610995 A1	25-09-1997
			AT 202811 T	15-07-2001
			AU 723983 B2	07-09-2000
			AU 2156797 A	10-10-1997
			CA 2248014 A1	25-09-1997
			DE 69705504 D1	09-08-2001
			DE 69705504 T2	25-10-2001

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 03/40271

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6159339	A	DK 888479 T3 WO 9735068 A1 EP 0888479 A1 ES 2160338 T3 JP 2000506941 T NO 984297 A NZ 331709 A	08-10-2001 25-09-1997 07-01-1999 01-11-2001 06-06-2000 17-09-1998 29-04-1999
WO 9730218	A 21-08-1997	US 5846663 A AU 724066 B2 AU 6650096 A BR 9612500 A CA 2246280 A1 CN 1217037 A EP 0880617 A1 IL 125702 A JP 11512793 T JP 3242929 B2 NO 983714 A NZ 313844 A PL 328528 A1 RU 2169225 C2 TW 434351 B WO 9730218 A1 US 6325893 B1 US 6048392 A ZA 9701320 A	08-12-1998 14-09-2000 02-09-1997 20-07-1999 21-08-1997 19-05-1999 02-12-1998 25-11-2001 02-11-1999 25-12-2001 13-10-1998 29-04-1999 01-02-1999 20-06-2001 16-05-2001 21-08-1997 04-12-2001 11-04-2000 18-08-1997
US 6248164	B1 19-06-2001	SE 508593 C2 AU 2524497 A BR 9708755 A CA 2250230 A1 CN 1219988 A ,B EP 0889996 A1 JP 2000507651 T SE 9601225 A WO 9737079 A1	19-10-1998 22-10-1997 04-01-2000 09-10-1997 16-06-1999 13-01-1999 20-06-2000 30-09-1997 09-10-1997
US 4687519	A 18-08-1987	CA 1284562 C DE 3669335 D1 EP 0228576 A1 FI 865243 A ,B, JP 62156394 A US 4721655 A	04-06-1991 12-04-1990 15-07-1987 21-06-1987 11-07-1987 26-01-1988